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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/750,852	01/05/2004	Katsushige Amano	2003_1916A	4332
513 7590 10/05/2007 WENDEROTH, LIND & PONACK, L.L.P. 2033 K STREET N. W. SUITE 800 WASHINGTON, DC 20006-1021			EXAMINER TANG, KENNETH	
			ART UNIT 2195	PAPER NUMBER
			MAIL DATE 10/05/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/750,852

Applicant(s)

AMANO ET AL.

Examiner

Kenneth Tang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 January 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 and 11-14 is/are rejected.
- 7) ☒ Claim(s) 10 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 January 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 1/5/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-14 are presented for examination.

Specification

2. The abstract of the disclosure is objected to because the Abstract is incomplete. The last sentence of the Abstract is incomplete and also needs to end with a period. Correction is required. See MPEP § 608.01(b).

Drawings

3. The drawings are objected to because of spelling errors. In Figures 4, 7, and 8, "DELAYTED TASK HANDLING PROCESS EXECUTION" should be amended to "DELAYED TASK HANDLING PROCESS EXECUTION".
4. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet"

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pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5. The invention of claims 1-6 and 13 are directed to non-statutory subject matter.
6. Claim 1 is directed to a software apparatus. As shown in Applicant's drawings of Fig. 1, the elements of the apparatus comprising of software elements within the Operating System (OS) (see Fig. 1, items 10-15). Specifically, the delayed task processing unit, the plurality of normal process executing units, the process scheduling unit, the delayed task registration processor, the delayed task priority controller, and the process priority controller are all software elements within the OS. Since the apparatus is software, it is not considered to be a machine. The software apparatus is also not a process, manufactures, nor a composition of matter. Therefore, claim 1 fails to fall under one of the four categories of inventions that Congress deemed to be appropriate subject matter of a patent under 35 U.S.C. 101 (see MPEP 2106).
7. Claims 2-6 depends on claim 1 and are also rejected based on their dependency.
8. Claim 13 is directed to a program that is software, per se, and thus fails to fall under one of the four categories of inventions (processes, machines, manufactures and compositions of

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matter) that Congress deemed to be the appropriate subject matter of a patent under 35 U.S.C.

101 (see MPEP 2106).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1-3, 5-9, and 11-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kling et al. (hereinafter Kling) (US 6,662,203 B1) in view of Takeuchi et al. (hereinafter Takeuchi) (US 5,944,778).

10. As to claim 1, Kling teaches a process scheduling apparatus for performing parallel processing of a plurality of processes respectively having assigned priorities (see Abstract), comprising:

at least one delayed task processing unit (processing core 40 or multiple processing units 45A-D) (Fig. 1, 40, col. 3, lines 23-42) for executing delayed tasks (signals/processes that are in delay queue) (see Abstract) in among the plurality of processes, having a queuing table in which the delayed tasks are to be registered (delay queue is built using one or several queue segments, having a table of pointers to segments) (col. 9, lines 1-7), and having an assigned priority that is variable (different priority levels) (see Abstract, col. 3, lines 28-42);

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a plurality of normal process executing units (multiple processing units 45A-D, Fig. 1, col. 3, lines 24-34) for respectively executing one of the plurality of processes other than the delayed tasks, and having an assigned priority identical to the priority of the executed process (col. 9, lines 31-35, col. 2, lines 35-48);

a process scheduling unit (job scheduler 30, Fig. 1, col. 3, lines 23-42) for sequentially activating the delayed task processing unit (processing core 40) and the normal process executing units (multiple processing units 45A-D, Fig. 1, col. 3, lines 24-34) according to the priorities assigned to these units so as to make these units execute corresponding processes (highest priority level is scheduled first before the lower priority level jobs) (col. 5, lines 1-18, col. 2, lines 34-48);

a delayed task registration processor (any one of multiple processing units 45A-D, etc., Fig. 1, col. 3, lines 24-34) for registering a newly generated delayed task (signals/processes that are in delay queue) (see Abstract) with the priority thereof to the queuing table (delay queue is built using one or several queue segments, having a table of pointers to segments) (col. 9, lines 1-7) of the delayed task processing unit (processing core 40);

a delayed task priority controller (priority analysis unit 36) for selecting the delayed task (signal/process in the delay queue 20) of highest priority from the delayed tasks registered in the queuing table (delay queue 20) (col. 5, lines 39-60, col. 8, lines 38-41)); and

11. Kling is silent in teaching a process priority controller for setting the priority of the delayed task processing unit identical to the priority of the delayed task selected by the delayed task priority controller. However, Takeuchi teaches task scheduling and execution of "normal"

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processes and idle or delay processes with a means for setting the execution priority (“raised” or “depressed”) of an idle/delayed process (col. 7, lines 15-23) and that setting the priority of a delayed task processing unit (signal handler) to its subject process is typical (col. 2, lines 40-51). Takeuchi also teaches registering the processes beforehand (col. 1, lines 32-38). Kling and Takeuchi are analogous art because they are in the same field of endeavor of task/processing scheduling. They both support normal and delay processes, registration of processes, as well as scheduling based on priority, among other things. One of ordinary skill in the art would have known to modify Kling’s task scheduling system to include the feature of setting the priority of the delayed task processing unit identical to the priority of the delayed task selected by the delayed task controller of Takeuchi’s task scheduling system. The suggestion/motivation for doing so would have been to reduce overhead required to control processes and to prevent further processing delays (col. 2, lines 54-65). Therefore, it would have been obvious to combine the references of Kling and Takeuchi to obtain the invention of claim 1.

12. As to claim 2, Kling teaches a process scheduling apparatus according to claim 1, wherein the delayed tasks include a task involved in an interrupt handler task for which processing can be delayed (process handler 70 or job scheduler 30) can delay process signals going into the delay queue 20 as well as handle the interrupt of signal/processes) (col. 9, lines 22-34, col. 5, lines 61-67 through col. 6, lines 1-8). Takeuchi also teaches this limitation on col. 25, lines 27-40 and col. 22, lines 1-24.

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13. As to claim 3, Takeuchi teaches a process scheduling apparatus according to claim 1, wherein when the new delayed task is generated, the process priority controller sets the priority of the delayed task processing unit before an initiation of a next process following a currently executed process at the generation of the new delayed task (col. 6, lines 57-60).

14. As to claim 5, Takeuchi teaches a process scheduling apparatus according to claim 3, wherein when the new delayed task is generated, the process priority controller sets the priority of the delayed task processing unit after a termination of the currently executed process but before the initiation of the next process (col. 6, lines 66-67 through col. 7 lines 1-23).

15. As to claim 6, Takeuchi teaches a process scheduling apparatus according to claim 3, wherein the currently executed process at the generation of the new delayed task includes both the processes executed by the normal process executing units and the delayed tasks executed by the delayed task processing unit (col. 24, lines 44-58).

16. As to claim 7, Kling teaches a process scheduling method for performing parallel processing of a plurality of processes respectively having assigned priorities, comprising:

sequentially executing a delayed task handling process for processing delayed tasks (signals/processes that are in delay queue) (see Abstract) and normal processes for executing

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processes other than the delayed tasks according to priorities respectively assigned to the delayed task handling process and the normal processes (col. 1, lines 63-65);

registering a newly generated delayed task (signals/processes are registered by being placed into the delay queue) with the priority assigned thereto in a queuing table (delay queue) (see Abstract, col. 9, lines 1-7 and 31-35, col. 2, lines 35-48);

17. Kling is silent in teaching selecting a delayed task of highest priority from the delayed tasks registered in the queuing table; and setting the priority of the delayed task handling process identical to the priority of the selected delayed task.

18. However, Takeuchi teaches task scheduling and execution of “normal” processes and idle or delay processes with a means for setting the execution priority of an idle/delayed process (col. 7, lines 15-23) and that setting the priority of a delayed task processing unit (signal handler) to its subject process is typical (col. 2, lines 40-51). Specifically, the process having the priority set to “raised” is assured to have the highest priority (col. 6, lines 55-65). Takeuchi also teaches registering the processes beforehand (col. 1, lines 32-38). Kling and Takeuchi are analogous art because they are in the same field of endeavor of task/processing scheduling. They both support normal and delay processes, registration of processes, as well as scheduling based on priority, among other things. One of ordinary skill in the art would have known to modify Kling’s task scheduling system to include the feature of setting the priority of the delayed task processing unit identical to the priority of the delayed task selected by the delayed task controller of Takeuchi’s task scheduling system. The suggestion/motivation for doing so would have been to reduce overhead required to control processes and to prevent further processing delays (col. 2, lines 54-

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65). Therefore, it would have been obvious to combine the references of Kling and Takeuchi to obtain the invention of claim 1.

19. As to claim 8, Kling teaches a process scheduling apparatus according to claim 1, wherein the delayed tasks include a task involved in an interrupt handler task for which processing can be delayed (process handler 70 or job scheduler 30) can delay process signals going into the delay queue 20 as well as handle the interrupt of signal/processes) (col. 9, lines 22-34, col. 5, lines 61-67 through col. 6, lines 1-8). Takeuchi also teaches this limitation on col. 25, lines 27-40 and col. 22, lines 1-24.

20. As to claim 9, Takeuchi teaches a process scheduling method as described in claim 7, wherein when the new delayed task is generated, the priority of the delayed task handling process is set before an initiation of a next process following a currently executed process at the generation of the new delayed task (col. 6, lines 57-60).

21. As to claim 11, Takeuchi teaches a process scheduling method according to claim 9, wherein setting the priority of the delayed task handling process when the new delayed task is generated occurs after a termination of the currently executed process but before the initiation of the next process (col. 6, lines 66-67 through col. 7 lines 1-23).

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22. As to claim 12, Takeuchi teaches a process scheduling method according to claim 9, wherein the currently executed process at the generation of the new delayed task includes both the normal processes and the delayed task handling process (col. 24, lines 44-58).

23. As to claims 13 and 14, they are rejected for the same reasons as stated in the rejection of claim 7.

Allowable Subject Matter

24. Claim 4 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 101, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

25. Claim 10 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

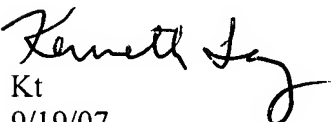
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- **Mukai (US 5,928,348)** teaches task scheduling for selecting a delayed process with the highest priority (col. 8, lines 27-36).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kenneth Tang whose telephone number is (571) 272-3772. The examiner can normally be reached on 8:30AM - 6:00PM, Every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on (571) 272-3756. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Kt
9/19/07